07-19-00

A

FORM PTO-1082

Case Docket No. RKPA4

THE COMMISSIONER OF PATENTS AND TRADEMARKS
Washington D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of inventor: Ray D. Kanter residing at Dallas, Texas
for: **SHOCK ABSORBING CARPET SYSTEM**

Enclosed are:
2 sheetS of drawings

An assignment of this invention to none.

A Declaration and Authorization of Agent

A verified statement to establish small entity status under 37 CFR 1.9 and CFR 1.27.

The filing fee has been calculated as follows:

			ENTITY SIZE			
	(Col. 1)	(Col. 2)	SMALL		OTHER	
FOR	NO. FILED	NO. EXTRA	RATE	FEE	RATE	FEE
BASIC FEE				$345	or	$690
TOTAL CLAIMS	20 -20	= 0	X11=$		or	X22=$
IND. CLAIMS	4 -3	= 1	X41=$	41	or	X82=$
MULTIPLE INDEPENDENT CLAIM				+135=$	or	+270=$
If the difference in Col. 1 is less than zero, enter 0 in Col. 2.			TOTAL	$386	or	TOTAL$

A check in the amount of $386.00 to cover the filing fee is enclosed.

Morgan L. Crow

Morgan L. Crow Reg. 25,622
113 Ashburne Glen Lane
Ovilla, TX 75154

CERTIFICATE OF MAILING BY "EXPRESS MAIL"

I, Morgan L. Crow certify that this patent application ***SHOCK ABSORBING CARPET SYSTEM*** *by Ray D. Kanter is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 on the date indicated below and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. "Express Mail"*

Mailing label no. EL556115087US

Signature: Morgan L Crow

Date: *July 17, 2000*

SMALL ENTITY DECLARATION

Applicant: Ray D. Kanter
Serial No:
Filed or Issued:
For:

DECLARATION CLAIMING SMALL ENTITY
STATUS (37 CFR 1.9(f) and 1.27(b)) INDEPENDENT INVENTORS

As below named inventor, I, Ray D. Kanter declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under section 41(a) and (b) of Title 35 United States Code, to the Patent and Trademark Office with regard to the invention entitled **SHOCK ABSORBING CARPET SYSTEM** described in:

(x) the specification filed herewith
( ) the application serial no.____________filed____________
( ) patent no.______________________, issued ______________

I have not assigned, granted, conveyed, or licensed and am under no obligation, under no contract, or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made of information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, of any patent to which this verified statement is directed.

Ray D. Kanter ___Ray D. Kanter___
Name of Inventor Signature of Inventor

Date 7-15-00

SHOCK ABSORBING CARPET SYSTEM

Cross-Reference to Related Applications: This is a Continuation in Part of co-pending patent application Serial Number 08/971,524, filed 11/17/97.

Background of the Invention:

Related Prior Art

In U.S. Patent 5,658,430 issued to Drake and Herrin in 1997 there is illustrated new wall to wall carpeting applied directly over worn carpeting having a backing secured to a hard floor surface, by spraying an adhesive onto the top pile surface of the old carpet.

In U.S. Patent 4,647,484 issued to Higgins in 1983 there is illustrated an underlay for carpets having a scrim supported lower foam rubber portion and a Mylar® upper portion having adhesive on both sides to provide an attachment to the lower portion and an adhesive upper portion for attachment to a carpet tile. The upper portion is protected by a release paper, which is removed before installation.

In U.S. Patent 5,304,268 issued to Hoopengardner in 1994 there is illustrated a carpet pad having a pressure sensitive adhesive for retaining the carpet and pad in place on a floor.

In U.S. Patent 4,990,399 issued to Hoopengardner in 1991 there is illustrated a carpet cushion of compressible foam having a pressure sensitive adhesive applied for retaining the carpet and pad in place on a floor, and having a spacer element laid into the adhesive after the adhesive is applied.

In U.S. Patent 4,804,567 issued to Reuben in 1989 there is illustrated an automobile carpet having a carpet pad attaching means removably connected by a pressure sensitive adhesive.

In U.S. Patent 4,797,170 issued to Hoopengardner in 1989 there is illustrated a carpet and pad with a pressure sensitive adhesive on one surface.

In U.S. Patent 4,557,774 issued to Hoopengardner in 1989 there is illustrated a carpet and pad with a pressure sensitive adhesive on its upper and lower surface.

In U.S. Patent 5,160,770 issued to Hoopengardner in 1992 there is illustrated a carpet and pad with a sealed surface and pressure sensitive adhesive applied to one or both sealed surfaces of the pad. Also illustrated is application of a hot melt pressure sensitive adhesive onto an unsealed pad surface.

Field of the Invention

In the installation of carpeting, it is known to place a carpet mat made of urethane foam or other open cell compressible material between the carpet and the floor. It is also known to use a pressure sensitive adhesive to bond the carpet to the carpet mat, and/or to bond the carpet mat to the floor. These inventions have been applied to wall to wall carpet systems. Because of the permeability of conventional carpet mat materials, undesirable wicking of the adhesive material into the mat occurs. Additionally, conventional systems are designed for comfortable walking, but provide inadequate protection during a fall.

It is desirable to eliminate the problem of wicking of adhesive material into the compressible material of the carpet mat. It is also desirable to develop a shock absorbing carpet system that protects people from injury in the event of a fall, where activity is such that a fall is likely. Places where the likelihood of a fall exists often host a variety of different events, or the use of a space of multiple utility, with varying requirements for the size and design of the flooring. Accordingly, there is a need for a shock absorbing carpet mat assembly that is both portable and configurable, into a variety of shapes and sizes.

Brief Summary of the Invention:

A carpet assembly with shock absorbing properties for preventing injury comprising a mat of closed cell foam composition having shock damping properties and having a top side and a bottom side and predetermined thickness and perimeter edges connecting the top side and the bottom side; a layer of adhesive which may be pressure sensitive adhesive covering the top side of the mat, a layer of carpet having a top side and a bottom side, the bottom side of the carpet being fastened in contact with the an adhesive which may be pressure sensitive adhesive for adherence thereto. Preferably, the mat is substantially 1 1/8 inch thick. The present invention is directed to the problem of safety in the design of flooring where people are likely to fall down, such as, playgrounds, child care centers, gymnasiums, and the like. These areas often require portability of such flooring systems, size variation, and reconfiguration of the shape of the system, as the nature of the events may demand. The present invention may be installed wall to wall or as a portable system to cover only an area as required for an activity such as gymnastics. By incorporating a mat with an impact attenuation that satisfies ASTM F-1292-99, the present invention provides a safe flooring system for a variety of applications where people are likely to fall down. The present invention eliminates undesirable wicking of the adhesive and the need for intermediate sealing systems, by using a closed cell carpet mat, which allows direct application of the adhesive.

Brief Description of the Drawings:

FIG. 1 is a cross-sectional view of a shock absorbing carpet mat assembly formed in accordance with this invention.

FIG. 2 is a top view of a shock absorbing carpet mat assembly showing multiple sections attached together in accordance with this invention.

FIG. 3 is a partial cross section view of a shock absorbing carpet mat assembly of 1-1/2 in thick mat with a tapered edge on the mat.

FIG. 4 is a partial cross section view of a shock absorbing carpet mat assembly of 5/8 in thick mat with a tapered edge on the mat.

FIG. 5 is a partial cross section view of a shock absorbing carpet mat assembly of 1-1/2 in thick mat with a tapered edge on the mat and showing a hook and loop fastening system to anchor the mat assembly.

Detailed Description:

The American Society for Testing and Materials has issued ASTM F-1292-99 Standard Specification for Impact Attenuation of surface Systems Under and Around Playground Equipment. This specification limits the maximum impact force to 200 times the force of gravity, from a specified height. My carpet mat assembly in the preferred embodiment limits a fall from 48 inches to the specified impact limit. Applications of carpet mats need to be adapted to the potential fall distance of a person walking on the mat, or on top of any equipment above the mat.

FIG. 1 is a cross-sectional view of a shock absorbing carpet mat assembly **1**. The assembly includes a mat section **2** made of a closed cell material. In the preferred embodiment, mat section **2** has a thickness of 1 1/8" or other as necessary to meet ASTM F-1292-99. Variations in density and hardness of the mat, however, may allow a mat as thin as 1/2". I believe that with present materials, the mat should be at least 1/2" thick. In the preferred embodiment, mat section **2** is made in sections 4' x 6'. The top side **3** of the mat section **2**, is coated with a layer of adhesive **4**. Prior to assembly, if pressure sensitive adhesive is used, the pressure sensitive adhesive **4** is covered with a removable liner (not shown) on the side opposite the mat section **2** to protect the pressure sensitive adhesive **4** from contact with any other surface during shipping and handling. The removable liner is removed to expose the surface of the pressure sensitive adhesive **4** prior to installation of the carpet **5**. To install the carpet **5**, the bottom side of the carpet **6** is place in direct

contact with the adhesive **4** and bonded thereto. The perimeter edges **7** of the mat section **2** may have a hook and loop fastener such as 3M Velcro® **8** attached. The hook and loop fastener **8** allows easy attachment of other mat sections to create a larger, removable, protective floor surface. The hook and pile fastener such as 3M Velcro® **8** also allows attachment of edge molding **9**. The edge molding **9** provides a perimeter of the shock absorbing carpet mat assembly **1** that is both aesthetically appealing and protective. Alternatively, edge molding **9** can be permanently attached to mat section **2** and carpet **5**, with a contact cement or other adhesive.

FIG. 2 is a top view of a shock absorbing carpet mat assembly **1** showing multiple sections **10** attached contiguously together. The sections are attached by means of the hook and pile fastener such as 3M Velcro® **8** along the perimeter edges **7** of each mat section **2**. If the multiple sections **10** do not complete a carpet assembly that is wall to wall in a room, the outside edge **11** of the multiple sections **10** can have edge molding **9** attached, preferably with contact cement. Preferably the edge molding is of closed cell foam, similar or identical to the mat **2**. Preferably, a hook and pile fastener such as 3M Velcro® is affixed to at least one perimeter edge of each individual assembly for detachably attaching multiple sections of the carpet mat assembly into a unit.

FIG. 3 is a partial cross section view of a shock absorbing carpet mat assembly of 1-1/2 inches thickness mat with a tapered edge on the mat. Mat 12 is 1-1/2 inches thick. Carpet 14, can be made liquid proof by the application of a liquid polyurethane to the bottom side, then a woven cloth is applied over the polyurethane. The treated bottom side of the carpet is glued by any suitable glue to the mat 12. The width of the taper illustrated is 7 inches. Tests have shown that the closed cell foam mat of 1-1/2 inch thickness will conform to the ASTM F-1292-99 Standard Specification for Impact Attenuation of surface Systems Under

and Around Playground Equipment for a 72 inch fall. I have found that a 7 inch width of taper to 1-1/2 in thickness to be a 4.67 ratio which is a good thickness to width ratio for the edge taper for a mat assembly. It is a gentle enough taper to reduce unexpected contact with the carpet when walking onto the edge of the carpet assembly. This width preferably is between 4 and 5 times the thickness, although it may vary between 1 and 12 times the thickness.

FIG. 4 is a partial cross section view of a shock absorbing carpet mat assembly of 5/8 in thick mat with a tapered edge on the mat. Mat 18 is 5/8 inches thick. Carpet 20, can be made liquid proof by the application of a liquid polyurethane (not shown) to the bottom side, then a woven cloth (not shown) is applied and adhered to the polyurethane. The treated bottom side of the carpet is glued by any suitable glue to the mat 18. Tests have shown that the closed cell foam mat of 5/8 inch thickness will conform to the ASTM F-1292-99 Standard Specification for Impact Attenuation of surface Systems Under and Around Playground Equipment for a 24 inch fall. The width illustrated of the taper is 3 inches for the 5/8 inch thick mat. I have found that a 3 inch width of taper to 5/8 inch thickness to be a 4.80 ratio which is a good width to thickness ratio for the edge taper for a mat assembly. It is a gentle enough taper to reduce unexpected contact with the carpet when walking onto the edge of the carpet assembly. This width preferably is between 4 and 5 times the thickness, although it may vary between 1 and 12 times the thickness.

FIG. 5 is a partial cross section view of a shock absorbing carpet mat 24 assembly of 1-1/2 in thick mat with a tapered edge on the mat and showing a hook and loop fastening system to anchor the mat assembly. In this preferred method, a carpet assembly as described in Figures 3 or 4 may be secured to a floor in an easy and convenient fashion. A hook and loop fastener system such as 3M Velcro® with a pressure sensitive adhesive on the outer

surfaces of the fastener portions is utilized. The hook and loop fastener portiones are assembled in mating and aligned relationship. The hook portion 24 of fastener is adhered to the bottom side of the mat in carpet assembly 34 in the location illustrated by arrow 28. The hook portion 24 of fastener may be adhered to the bottom side of the mat in carpet assembly 34 with pressure sensitive or other adhesive. The loop portion 26 of the hook and loop fastener is matingly positioned in engagement with hook porion 24. Then the carpet assembly is placed in the position where it is desired to be affixed as illustrated by arrow 32. The protective film 36 is removed from the loop portion of the fastener system and the mat is affixed to the floor. Foot pressure may be used to insure adherence of the loop portion to the floor. Then the carpet assembly may be removed, leaving the relatively smooth loop portion of the fastener system in place on the floor. The carpet assembly may then be repositioned and held at the same location on the floor.

I am disclosing a carpet assembly with shock absorbing properties for preventing injury comprising; a mat of closed cell foam composition having shock damping properties and having a top side and a bottom side and predetermined thickness and perimeter edges connecting said top side and said bottom side; a layer of adhesive which may be pressure sensitive adhesive covering the top side of the mat, a layer of carpet having a top side and a bottom side, the bottom side of the carpet being fastened in contact with the pressure sensitive adhesive for adherence thereto. I am further disclosing a carpet mat assembly having a removable liner covering a pressure sensitive adhesive on the top side of the mat to protect the pressure sensitive adhesive from contact with any other surface, prior to fastening the carpet to the mat.

Although the taper illustrated in Figures 3, 4 and 5 have a straight line profile, for the purposes of this specification, taper includes variations from the straight line comprising convex curves, concave curves, combinations of these curves and combinations of these

curves with straight line elements.

Although elements of the invention have been illustrated in the accompanying drawings and described in the foregoing description it will be understood that the invention is not limited to the embodiments disclosed, but is capable of rearrangements, modifications, substitutions and reversals of parts and elements without departing from the spirit of the invention.

I claim:

1. A carpet assembly with shock absorbing properties comprising;

a mat of closed cell foam composition having shock damping properties and having a top side and a bottom side and a thickness of not less than substantially 5/8 inch and perimeter edges connecting said top side and said bottom side;

a layer of adhesive covering the top side of the mat; and

a layer of carpet having a top side and a bottom side, the bottom side of the carpet being fastened in contact with the adhesive for adherence thereto.

2. A carpet mat assembly according to claim 1, wherein the mat has an edge of closed cell foam forming least one perimeter edge of the carpet mat.

3. A carpet mat assembly according to claim 2, wherein the edge of closed cell foam is removably attached to the mat.

4. A carpet mat assembly according to claim 1, wherein the assembly comprises like portable sections removably secured contiguously together.

5. A carpet mat assembly according to claim 1, wherein the mat is not less than substantially 1 1/8 inch thick.

6. A carpet mat assembly according to claim 1, wherein the mat is not less than substantially 1 1/2 inch thick.

7. A carpet mat assembly according to claim 1, wherein the mat has impact attenuation in compliance with ASTM F-1292-99 for a fall of 24 inches.

98. A carpet mat assembly according to claim 1, wherein the mat has impact attenuation in compliance with ASTM F-1292-99 for a fall of 48 inches.

9. A carpet mat assembly according to claim 1, wherein the mat has impact attenuation in compliance with ASTM F-1292-99 for a fall of 72 inches.

10. A carpet mat assembly according to claim 2, wherein the edge of closed cell foam has a decreasing thickness, the width of the decreasing thickness is 1 to 12 times the thickness of the mat.

11. A carpet mat assembly according to claim 10, wherein the edge of closed cell foam has a decreasing thickness, the width of the decreasing thickness is 4 to 5 times the thickness of the mat.

12. A carpet assembly with shock absorbing properties comprising;

a mat of closed cell foam composition having shock damping properties and having a top side and a bottom side and a thickness not less than substantially 5/8 inch thickness and perimeter edges connecting said top side and said bottom side;

a layer of adhesive covering the top side of the mat,

a layer of carpet having a top side and a bottom side, the bottom side of the carpet being fastened in contact with the adhesive for adherence thereto, and

an edge of closed cell foam forming least one perimeter edge of the carpet mat.

13. A carpet mat assembly according to claim 12, wherein the edge molding is removably attached to at least one perimeter edge of the carpet mat.

14. A carpet mat assembly according to claim 13, wherein the edge molding is attached to at least one perimeter edge of the carpet mat assembly with an adhesive.

15. A carpet mat assembly according to claim 12, wherein an element of a hook and loop fastener is affixed to at least one perimeter edge of each individual assembly for detachably attaching multiple sections of the carpet mat assembly into a unit.

16. A carpet assembly with shock absorbing properties comprising:

a mat of closed cell foam composition having shock damping properties and having a top side and a bottom side and predetermined thickness and perimeter edges connecting said top side and said bottom side;

a layer of adhesive covering the top side of the mat;

a layer of carpet having a top side and a bottom side;

the carpet having a coat of polyurethane on the bottom side, then a woven material applied to the coat of polyurethane; and

the bottom side of the carpet being attached to the mat with the layer of adhesive.

17. A carpet assembly comprising:

a mat having a top side and a bottom side and perimeter edges connecting said top side and said bottom side;

a layer of adhesive covering the top side of the mat; and

a layer of carpet having a top side and a bottom side, the bottom side of the carpet being attached to the mat by the layer of adhesive;

a hook member and a loop member forming a hook and loop detachable connection wherein one of the members is attached to the bottom side of the mat on at least one of the perimeter edges and the other member is attachable to a floor to form a detachable connection of the carpet assembly to a floor.

18. The carpet assembly according to claim 17 wherein the hook member is attached to the mat.

19. The carpet assembly according to claim 17 wherein the hook and pile fastener members have pressure sensitive adhesive for attachment of the members.

20. The carpet assembly according to claim 17 wherein the pile fastener member has pressure sensitive adhesive for attachment of the member.

Abstract of the Disclosure:

A carpet mat assembly with shock absorbing properties includes a mat made of closed cell foam sections. The mat sections are sized to be readily portable, preferably 4 foot by 6 foot in size. The mat thickness is selected to conform to ASTM F1292-99. Preferably, the mat thickness is 1 1/8" thick. The mat section may be coated with a pressure sensitive adhesive covering on one side of the mat. The pressure sensitive adhesive is covered with a removable liner. The liner is removed to expose the pressure sensitive adhesive. Carpet is applied to the coated surface of the mat and the pressure sensitive adhesive bonds the carpet to the mat. The outer perimeters of each mat may be lined with a hook and pile fastener such as 3M Velcro® for attaching multiple sections of the carpet mat assembly securely together. On the outer perimeter of mat sections not joined to other mat sections, an edge molding preferably made from the same closed cell foam may be integral, or may be attached to the mat with a contact adhesive, or by other means. The completed assembly provides a floor or ground surface safe for playgrounds, schools, child care centers, martial arts, gymnasiums or other areas where shock absorbing surfaces are required.

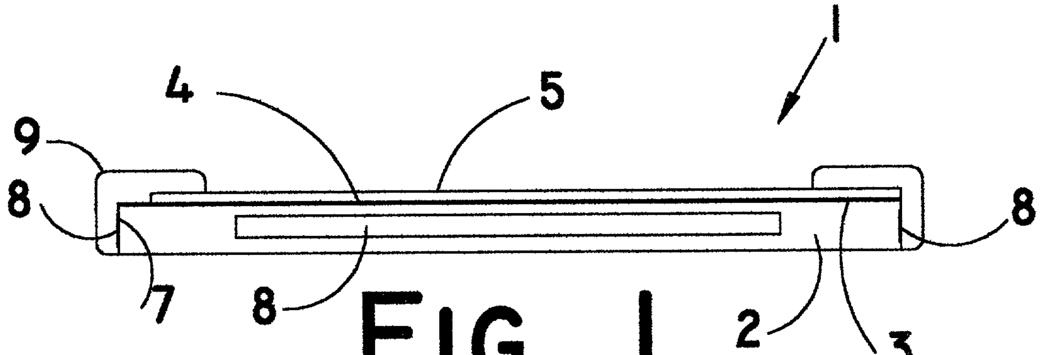

FIG. 1

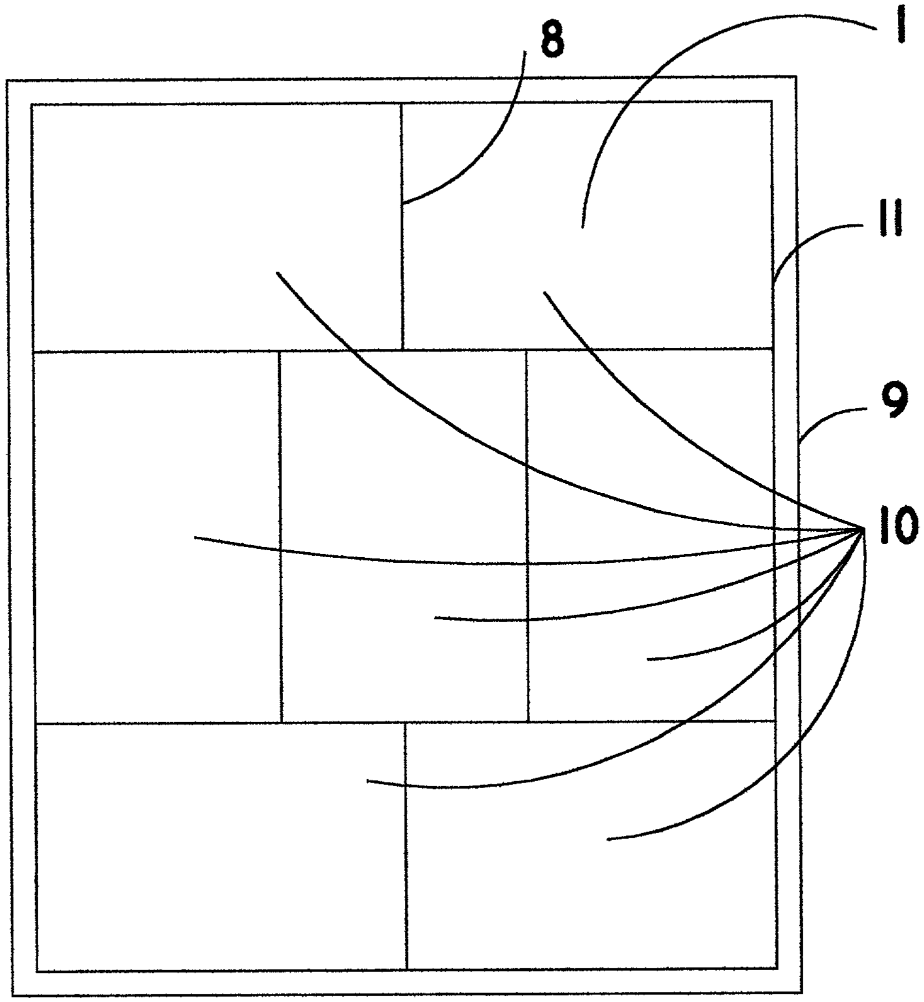

FIG. 2

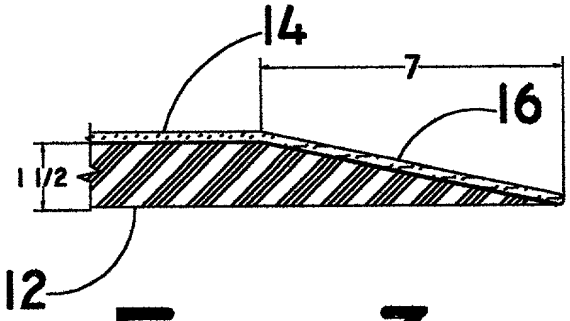

FIG. 3

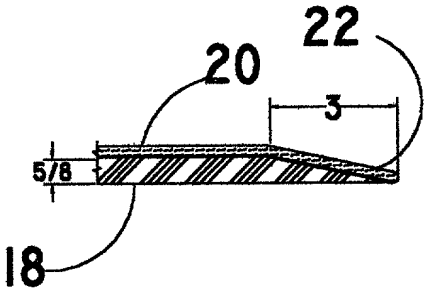

FIG. 4

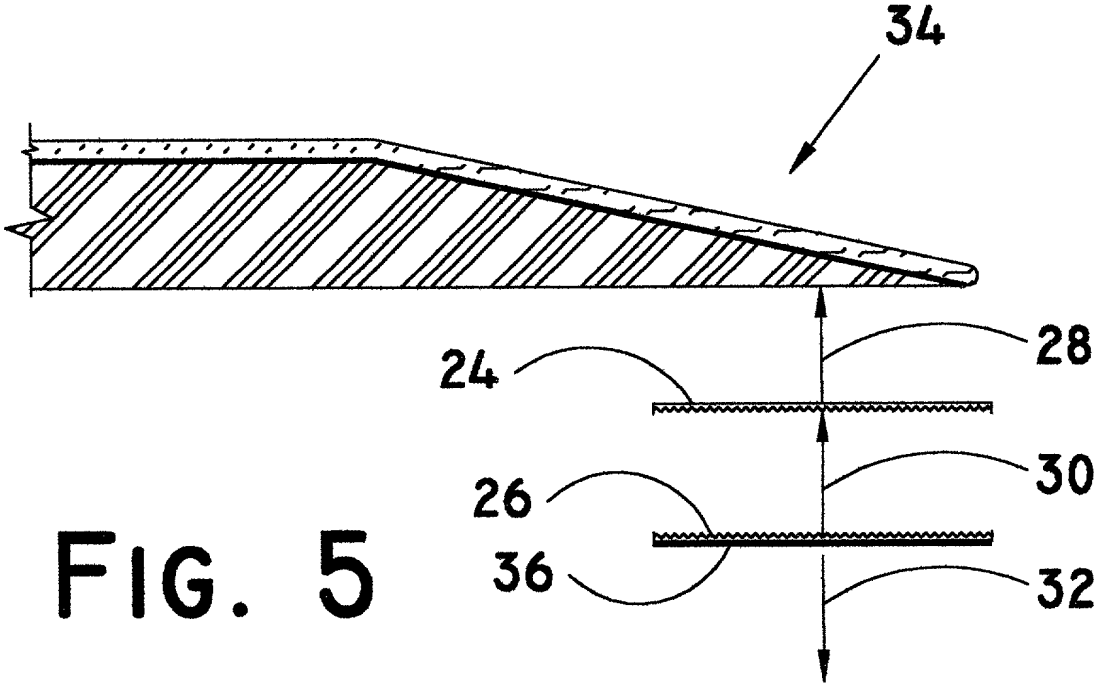

FIG. 5

DECLARATION
AUTHORIZATION OF AGENT
AND PETITION

I, Ray D. Kanter residing in Dallas, Texas declare that I am a citizen of the United States of America, and that I have reviewed and understand the foregoing specification and claims, and that I verily believe that I am the sole, original, and first inventor of the invention **SHOCK ABSORBING CARPET SYSTEM** described and claimed herein; that I do not know and do not believe that this invention was ever known or used before my invention thereof, or patented or described in any printed publication in any country before my invention thereof, or more than one year prior to this application; or in public use or on sale in the United States more than one year prior to this application; that this invention has not been patented in any country foreign to the United States on an application filed by me or my legal representatives or assigns more than twelve months before this application. I acknowledge my duty to disclose information of which I am aware which is material to the examination of this application in accordance with 37 CFR section 1.56(a).

And I hereby appoint Morgan L. Crow Reg. No. 25,622, as my Patent Agent with Authorization of Agent with full power of substitution and revocation to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith, and request that all correspondence about the application be addressed to Morgan L. Crow, 113 Ashburne Glen Lane, Ovilla, TX, 75154. Direct telephone calls to 972-217-1717.

I declare further that all statements made herein of my own knowledge are true and that all statements made on knowledge and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application of any patent issuing thereon.

WHEREFORE, I pray that Letters Patent be granted to me for the invention described and claimed in the foregoing specification and claims, and I hereby subscribe my name to the foregoing specification and claims, declaration, authorization of agent and this petition.

Sole Inventor Ray D. Kanter
First name Middle initial Last Name:

Date: 7-15-00
Residence: Dallas, Texas

Mailing Address: 10723 Preston Rd. #243
Dallas, TX 75230